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OAK RIDGE NATIONAL LABORATORY
OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

July 1, 1988

Mr. Joseph A. Lenhard, Assistant Manager
Energy Research and Development
Department of Energy, Oak Ridge Operations
Post Office Box 2001
Oak Ridge, Tennessee 37831-8600

Dear Mr. Lenhard:

DOE Headquarters Environmental Survey - Quarterly Status Report

Reference: Letter from J. A. Lenhard to Alexander Zucker, entitled "DOE Headquarters Environmental Survey - Quarterly Status Report," dated June 9, 1988.

As requested in the letter referenced above, we have prepared a DOE Headquarters Environmental Survey Status Report (enclosed). This report lists each of the findings, action taken, and the status of each. Action has been completed on seven (7) of the findings. On the remaining forty (40), action has been initiated but it is not yet completed.

While progress has been made on resolution of all findings, there have been several significant accomplishments. These include the following:

1. Finding No. 4 - Bids have been received and evaluated for the development of flow calibration procedures and procurement of calibration equipment for the eleven (11) Perimeter Air Monitoring Stations.

2. Finding No. 24 - A RCRA Closure Plan/Post-Closure Permit application has been submitted for the RCRA regulated portion of SWSA-6 and is undergoing regulatory review. Closure activities are scheduled to begin by November 8, 1988.

3. Finding No. 32 - In June 1987, ORNL initiated an aggressive diking program for all aboveground tanks. This includes inspection and testing of all existing dikes, repairs and/or installation whenever necessary, and the maintenance of a tank database.

4. Finding No. 34 - ORNL has established a Drum Task Group charged with the responsibility for managing drum storage. As detailed in the Drum Listing in the attachment, considerable progress has been achieved.

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5. Finding No. 35 - ORNL has completed an update of the inventory and sampling (Phase I) of PCB-containing equipment. The PCB Annual Report has been completed and submitted to EPA.

6. Finding No. 36 - A contractor has been selected for site cleanup of the area contaminated by petroleum releases in the ORNL Services Area (7000). Work is expected to begin by July 15, 1988.

In addition to the significant accomplishments listed above, ORNL has made significant progress in its corrective action efforts. Installation of groundwater, water quality monitoring wells has been completed at several of the Waste Area Groupings (WAGs). Sampling has been initiated at SWSA-6 (WAG-6) and is scheduled to begin in the Main Plant Area (WAG-1) in the near future. Remedial Investigation Plans (RFIs) have been submitted for WAGs 1, 4, 5, and 10.

If you have any questions or need additional information, please contact P. S. Rohwer at 4-6670.

Sincerely,

R. S. Wiltshire

R. S. Wiltshire
Executive Director

RSW:CEN:1280:aw

Enclosure

cc: L. D. Bates
B. J. Davis, DOE-ORO
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File - RC

Listing of Findings - Action Completed

Finding Number 2

Finding Number 3

Finding Number 8

Finding Number 10

Finding Number 18

Finding Number 19

Finding Number 47

ENVIRONMENTAL SURVEY STATUS REPORT

Oak Ridge National Laboratory

July 1, 1988

MEDIA: AIR (#1)

CATEGORY IV

FINDING: Emissions data, as presented in the annual environmental surveillance report, are determined from a series of assumptions that have not been checked, challenged, or modified over the last several years, resulting in the possibility of less reliable data with each passing year.

ACTION: For calendar year 1987, the assumptions for estimating stack emissions will be checked and documented. Stack volume assumptions will be modified for all stacks except 6010 and 7025 based on current sampling data using EPA methods. Stacks 6010 and 7025 will also be sampled, but probably not within the calendar year.

The current line item project, "Environmental Monitoring System Upgrade (EMSU)", which should be completed this calendar year, will address concerns raised by the survey team. New instrumentation using state-of-the-art technology is being installed in the primary stacks: 7911, 3039, and 7025. Samplers are also being installed as part of the line item. Emissions data will then be based on empirical data collection from instruments and samplers. A 1988 General Plant Project, scheduled for completion in 1990, will provide new instrumentation and sampling capabilities for stacks 6010, 7512, 2026, and 3020.

STATUS: Open

MEDIA: AIR (#2)

CATEGORY IV

FINDING: The process of estimating (1) annual airborne emissions and (2) resulting doses contains no formal documentation, validation, or quality control measures except in the analytical laboratories.

Comment: (1) Annual airborne emissions are estimated from conservative calculations that are based on measured emissions and inventory information.
(2) Dose equivalents resulting from annual airborne emissions are estimated using the AIRDOS-EPA computer code, which is well documented and generally accepted for such purposes. Validation studies are not conducted on an annual basis because models such as AIRDOS-EPA generally have been found to overpredict doses under reasonably well-behaved meteorological conditions. The applicability of this finding to ORNL has been confirmed by previous comparisons of off-site monitoring results and model predictions.

ACTION: (1) All calculations and data used to estimate annual airborne emissions will be documented and verified. Also, emission-source parameter values will be verified and documented.
(2) All input data (annual emissions and source parameters) will be provided in writing and will indicate clearly the source of the data. Also, a checklist will be used to ensure that all input data have been entered correctly and that the results of all calculations are correct, within the limits of the code.

SCHEDULE: (1) Actions were implemented and included in the 1987 Annual Environmental Surveillance Report.
(2) Actions were implemented and included in the 1987 Annual Environmental Surveillance Report.

STATUS: Closed

MEDIA: AIR (#3)

CATEGORY IV

FINDING: The design of most of the ambient air monitoring stations may affect the collection of a representative particulate sample due to possible flow interferences from air conditioners and pump exhausts.

ACTION Where physical conditions permit, air sampling intakes are located on the roofs of the instrument shelters. Where this was not possible, some sampling equipment is located on the same side of the building as the heat pump unit. However, the discharge from the heat pump is forcefully directed at a 90-degree angle from the sample intake. To further minimize possible interference, the pump exhausts are directed toward ground level. (Intakes are above exhausts.)

It is unlikely that excessive interference with ambient flow is caused by these pumps. Greater perturbation results from changing wind directions and magnitudes.

Note also that gravimetric measurements are not made at the sites where the monitor intake is located on the side of the shelter.

STATUS: CLOSED

MEDIA: AIR (#4)

CATEGORY IV

FINDING: Ambient air particulate samples do not have calibrated air sampling rates; thus the sample volume for each sample is of unknown accuracy.

ACTION: A request for proposals to develop flow calibration procedures, procure the necessary calibration equipment, and to calibrate eleven (11) Perimeter Air Monitoring Stations was issued 9/11/87.

Review of all bids was made on the bases of technical merit, previous relevant experience, and cost. Following this review, a preferred subcontractor was selected.

The contract with the preferred subcontractor shall stipulate:

(1) The initial calibration will consist of full, end-to-end calibration for 11 Perimeter Air Monitoring Stations.

Note: Currently an "add-on" to this contract is being negotiated to calibrate flows at the stack locations.

(2) Procedures, sources, and equipment utilized in the calibration process will become the property of the Oak Ridge National Laboratory (ORNL) after the initial calibration.

Following completion of the work by the contractor, ORNL shall develop and initiate a flow calibration program for all ambient air monitoring stations. In addition, calibrated flow totalizers are currently being installed at the ambient air monitoring stations.

Issue Request for Proposals:	Complete
Receive Bids from Vendors:	Complete
Complete Evaluation of Bids:	Complete
Awarding of Contract:	1/31/88
Actual Calibration:	3/1/88 - 5/31/88
Completion of Contract Requirements:	6/15/88
Development of ORNL Flow Calibration Program:	6/30/88
Implementation of ORNL Flow Calibration Program:	8/31/88

STATUS: Open

MEDIA: RADIATION/SOIL (#5)

CATEGORY III

FINDINGS: Two of the Environmental Research Areas have resulted in Cesium 137 contamination of the soils with resulting potential exposure to the general public should the land be released. In addition, one of these is currently the largest contributor to off-site dose from ORNL.

ACTION: The Environmental Research Areas have been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as known contaminated areas. Initial sampling of those areas confirmed the presence of radioactive materials only and showed evidence that continuing releases were occurring. Based on these results, those areas have been recommended for implementation of a Remedial Investigation/Feasibility Study (RI/FS) and subsequent corrective actions under the DOE Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Program.

Interim remedial actions are also being considered to reduce the exposure potential from the Cs-137 plots. Among the interim measures being considered are possible steps to limit personnel access to the area, and possible construction of an earthen berm to shield persons on the river and the shoreline and thus reduce the direct exposure potential.

The first step in the RI/FS process is the development of a Remedial Investigation Plan for each Waste Area Grouping (WAG). For the Environmental Research Areas (WAG 13), submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for December 1988.

STATUS: Open

MEDIA: RADIATION/SOIL (#6)

CATEGORY III

FINDING: Soil in the drainage area of Building 7500 has been contaminated by unknown radionuclides with measured readings of greater than 5 millirad/hour with hot spots as high as 40 millirad/hour. The source of contamination is unknown. The area is a drainage area which enhances the potential for surface migration.

ACTION: The Building 7500 (WAG 9) area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 9, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) was completed in May 1988.

STATUS: Open

MEDIA: RADIATION/SOIL (#7)

CATEGORY IV

FINDING: There is a lack of delineation of radiation zones around locations of radiation greater than 2.5 millirem/hour.

ACTION: Radiation levels are continuously being measured in and around zone areas where radiation hazards exist for the purpose of determining the adequacy of zone boundaries. Because conditions in these areas are dynamic, there are fluctuations in radiation levels. Areas where major fluctuations can occur are instrumented for purposes of detecting such changes. Other areas are surveyed periodically and zone boundaries adjusted accordingly.

Surveys of areas for the purpose of establishing zone boundaries is a continuing program. Some areas, where radiation levels fluctuate radically, are surveyed almost daily. Other areas are surveyed less frequently.

STATUS: Open

MEDIA: RADIATION/SOIL (#8)

CATEGORY IV

FINDING:	Lack of documentation on critical assumptions used in the dose calculations creates difficulty in verifying the dose assessment used in the radiological dose reported in the environmental surveillance report.
COMMENT:	The basis for this finding is uncertain. All assumptions and most data used in the dose calculations are stated or referenced explicitly in Section 11 of the surveillance report. The remaining data are listed in other sections of the report, notably, in Section 8.
ACTION:	A checklist will be established to ensure that all assumptions and data are stated or referenced explicitly in the appropriate subsections of the 1987 surveillance report.
SCHEDULE:	Actions were implemented for inclusion in the 1987 Annual Environmental Surveillance Report that was published in April 1988.
STATUS:	Closed

MEDIA: RADIATION/SOIL (#9)

CATEGORY IV

FINDING: There is a potential for bromine gas formation due to cracks and ruptures in hot cell windows which causes the zinc bromide solution to drain into low level lines or process waste drains.

ACTION: We know that zinc bromide windows do deteriorate and can begin to leak, and on at least one occasion the described circumstance did develop. However, window failures typically are leaks not catastrophic breaks and the quantity of zinc bromide loss is small. Furthermore, the majority of the drains into which leaking zinc bromide could find its way typically are maintained in the high pH range which minimizes the potential for bromine gas formation. The potential for problems with the zinc bromide windows is recognized and as funds are made available for hot cell upgrade zinc bromide containing windows are preferentially replaced with lead glass windows. However, because lead glass windows are more expensive than zinc bromide windows, the existing zinc bromide windows are occasionally refurbished or replaced with like kind.

STATUS: Open

MEDIA: RADIATION/SOIL (#10)

CATEGORY IV

FINDING: ORNL does not report a total dose from all pathways to the general public as required by DOE Order 5480.1A as modified by Vaughn in 1985.

COMMENT: All the elements necessary for this calculation were given in the Environmental Surveillance Report.

ACTION: The total dose from all combinable pathways to the general public will be calculated and reported as required by DOE Order 580.1A as modified by Vaughn in 1985.

Actions were implemented for inclusion in the 1987 Annual Environmental Surveillance Report that was published in April 1988.

STATUS: Closed

MEDIA: GROUNDWATER (#11)

CATEGORY III

FINDING: Groundwater in Melton Valley is contaminated with radionuclides, metals, and organic chemicals. The principle contaminants include strontium, cesium, and cobalt which occur at widespread locations in Melton Valley at levels up to 350,000 pico curies/liter and tritium which occurs in SWSA 5 at levels exceeding 5,000,000 pico curies/liter. Metals including lead, zinc, and cadmium occur at levels exceeding drinking water standards at SWSAs 4 and 5. Organic compounds including naphthalene, toluene, ethyl benzene and methylene chloride are detected in SWSA 6.

ACTION:

(1) The Melton Valley area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of Remedial Investigation Plans for each Waste Area Grouping (WAG). For Melton Valley (WAGs 2 and 4-10), submittal of these plans to the Tennessee Department of Health and Environment/ Environmental Protection Agency (TDHE/EPA) is scheduled over the period from December 1986 through September 1988.

(2) Groundwater monitoring has been an important part of the ORNL environmental surveillance of the Melton Valley area for a number of years. Several hundred wells have been used routinely to track the known contamination in the Melton Valley waste disposal areas. Improvements to this monitoring well network are now under way, with over 300 additional water level and/or water quality wells being constructed in support of the Remedial Action Program's Remedial Investigation/Feasibility Study (RI/FS) effort.

Completion of this network upgrade is scheduled for the end of CY 1989.

STATUS: Open

MEDIA: GROUNDWATER (#12)

CATEGORY III

FINDING: Groundwater in Bethel Valley is contaminated with radionuclides, metals, and organic chemicals. The principle contaminants include strontium and cesium which occur throughout the area at levels exceeding 2,200 pico curies/liter; metals including zinc, lead, and cadmium occur in the main plant area at levels exceeding drinking water standards; and organics including trichloroethylene, chloroform and methylene chloride occur in the main plant area in the parts per billion range.

ACTION:

(1) Bethel Valley areas have been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of Remedial Investigation Plans for each Waste Area Grouping (WAG). For Bethel Valley (WAGs 1, 2, 3, and 17), submittal of these plans to the Tennessee Department of Health and Environment/ Environmental Protection Agency (TDHE/EPA) is scheduled for December 1987 through December 1988.

(2) Groundwater monitoring has been an important part of the ORNL environmental surveillance of the Bethel Valley area for a number of years. Several hundred wells have been used routinely to track the known contamination in the Bethel Valley waste disposal areas. Improvements to this monitoring well network are now under way, with over 300 additional water level and/or water quality wells being constructed in support of the Remedial Action Program's Remedial Investigation/Feasibility Study (RI/FS) effort.

Completion of this network upgrade is scheduled for the end of CY 1989.

STATUS: (1) Open

MEDIA: GROUNDWATER (#13)

CATEGORY III

FINDING: Groundwater in the horizons used for waste injections at the hydrofracture sites is contaminated with radionuclides including strontium, cesium, and curium. The potential exists for the spread of the contaminants to other formations.

ACTION:

(1) The hydrofracture areas have been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as known solid waste management units. Initial sampling of those areas confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, these areas have been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 10, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) was completed in August 1987. Implementation plan was submitted to the TDHE/EPA in January 1988.

(2) In addition to the Remedial Investigation efforts at the hydrofracture sites, action and agreements with the regulators on two other fronts have been instituted. An overall Remedial Action Plan (ORNL/RAP-1) was prepared to guide the characterization, assessment, and final closure actions for those sites. Part of this plan identified the need for development of comprehensive well plugging and abandonment (P&A) plans for groundwater monitoring wells within a one-mile radius of the site.

Two plans were prepared for regulatory review/approval (ORNL/RAP-Sub-86/72140/1 and ORNL/RAP-Sub-86/72140/2) in 1987. A demonstration of plugging and abandonment techniques scheduled for completion in June 1988 has been postponed with the concurrence of EPA/TDHE.

STATUS: Open

MEDIA: GROUNDWATER (#14)

CATEGORY III

FINDING: The potential exists for migration and spread of groundwater contamination by vertical flow in old well bores. These old well bores present pathways for shallow contamination to enter deeper horizons.

ACTION: An inventory of groundwater wells, core holes, and other subsurface exploration sites has been prepared in support of the Hydrofracture Facilities' well plugging and abandonment (P&A) program. These wells are identified in the Draft Plugging and Abandonment Plan for ORNL Hydrofracture Operations (ORNL/RAP-Sub-86-72140/1). Wells have been classified into various categories depending upon their (1) usefulness in current site-characterization activities, (2) location, (3) construction characteristics, and (4) current conditions. Permanent P&A will be conducted according to regulatory approved plans.

STATUS: Open

MEDIA: GROUNDWATER (#15)

CATEGORY IV

FINDING: ORNL has currently cataloged over 1,000 wells on site. A large number of these existing wells are not protected with locking caps and thus provide an opportunity for tampering or accidental contamination.

ACTION:

(1) Monitoring well characterization and assessment is ongoing as a part of both the Hydrofracture Plugging and Abandonment, Remedial Investigation/ Feasibility Study (RI/FS), and sites maintenance and surveillance efforts under the ORNL Remedial Action Program. As part of those activities, the well construction characteristics (i.e., cap design) are being documented and evaluated. For the older, but usable, well designs without caps, plans are already in place for fabrication and installation of sheet metal covers to eliminate rainwater collection and discourage inadvertent contamination of the wells.

This portion of the corrective action plan will be completed in December 1988.

(2) For wells with no foreseeable use, P&A steps will be taken as part of corrective actions within each WAG.

(3) All new well specifications include either a tight-fitting cap or locking cap, depending upon the well type.

STATUS: Open

MEDIA: ACTIVE WASTE HANDLING (#16)

CATEGORY II

FINDING: There is a potential for releases of radioactive contaminants, precisely cesium and strontium and other fission products, to the soil and groundwater due to leaks in liquid low level waste collection tanks, which includes those tanks taken out of service, as well as transfer lines.

ACTION: The active and inactive portions of the liquid low-level waste (LLLW) system are routinely monitored to detect the presence of leaks from these systems. This monitoring consists of a combination of continuous waste volume measurements, volume balances during waste transfers, dry well sampling of tank farm groundwater, and continuous monitoring of process waste leaving tank farm areas. This monitoring does not reduce the potential for development of leaks within lines or tanks, but does provide assurance that such leaks are rapidly discovered and corrective actions taken. It is recognized that the aging LLLW system needs to be replaced and the old system decommissioned. Planning is under way on both fronts as high-priority DOE projects.

A FY 1988 line item project is in design stage now to provide new doubly contained lines and tanks for the majority of the Bethel Valley complex. Completion of this system upgrade is scheduled for 1991. Remedial actions for the currently inactive portions of the system, as well as those portions of the system replaced under that line item, will be performed according to regulatory plans. Tank sampling and analysis in support of this remedial action planning will be performed in FY 1988, leading to waste treatability studies and alternatives assessments in FY 1989 through FY 1990. Sampling was initiated in June 1988. Closure schedules have not yet been defined for those tanks, although a briefing for the TDHE and EPA was held on August 31, 1987, to begin the process of setting such commitments. Such discussions are continuing.

STATUS: Open

MEDIA: ACTIVE WASTE HANDLING (#17)

CATEGORY III

FINDING: Past leaks from liquid low level waste tanks and lines have resulted in releases of radioactive, and possibly chemical, contamination to soils and groundwater in the Bethel and Melton Valley areas.

ACTION:

(1) The Bethel and Melton Valley areas have been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units, including liquid low-level waste (LLLW) line leak sites. Initial sampling of those areas confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, those areas have been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of Remedial Investigation Plans for each Waste Area Grouping (WAG). Submittals for the Bethel and Melton Valley WAGs to the Tennessee Department of Health and Environment/ Environmental Protection Agency (TDHE/EPA) are scheduled for completion by December 1988.

(2) Groundwater monitoring has been an important part of the ORNL environmental surveillance of the Melton Valley area for a number of years. Several hundred wells have been used routinely to track the known contamination in the Melton Valley waste disposal areas. Improvements to this monitoring well network are now under way, with over 300 additional water level and/or water quality wells being constructed in support of the Remedial Action Program's Remedial Investigation/Feasibility Study (RI/FS) effort.

Completion of this network upgrade is scheduled for the end of CY 1989.

STATUS: Open

MEDIA: ACTIVE WASTE HANDLING (#18)

CATEGORY IV

FINDING: Access control at the Recontour Site is not adequate to prevent unauthorized disposal activities which could result in improper disposal of hazardous or radioactive wastes.

ACTION: Access control to the recontour site has been a recognized problem from the beginning of operations there. Control of that site is now the responsibility of the ORNL Waste Management Operations Program, and several steps were implemented to maintain proper access restrictions. These include:

(1) Administrative Control - The site has been closed to further use and waste generators informed of that action.

(2) Permanent Physical Barriers - A permanent gate has been installed and is maintained in a locked position.

(3) Routine Monitoring - Daily check is made by the Waste Operations Group to assure that the administrative and physical barriers are effective.

All actions necessary to prevent unauthorized access to the site have been completed.

STATUS: Closed

MEDIA: ACTIVE WASTE HANDLING (#19)

CATEGORY IV

FINDING: Wastewater from the ORNL Paint Shop (Building 7007) is discharged to the 7000 Area storm sewer without prior analysis.

ACTION: The Paint Shop wastewater is periodically discharged (according to Paint Shop personnel, about once per year) to an asphalt-covered parking area west of the building, and surface slope conveys the effluent to a parking lot runoff drain northeast of Building 7006. This drain routes runoff to a storm drain discharge pipe (Outfall #234) that discharges west of Building 7040. This pipe carries the combined runoff from much of the 7000 Area, and routes the runoff toward White Oak Creek. Normally, NPDES water samples for the Paint Shop are taken from the collection tanks within that facility, prior to discharge. During the strike by union employees that occurred in the summer of 1987, the NPDES samples for the Paint Shop were taken at the #234 pipe, because the Paint Shop was often vacant and locked.

a) The Paint Facility has been shut down by P&E; therefore, no discharge. If facility is started up, P&E will inform EMC. Monthly monitoring reports now reflect this change in operation.

STATUS: Closed

MEDIA: INACTIVE SITES AND RELEASES (#20)

CATEGORY III

FINDING: WAG 1 - Past liquid disposal, numerous leaks and releases, and inactive burial grounds in WAG 1 have contributed to radioactive contamination to the groundwater in Bethel Valley, and radioactive and/or mercury contamination to the surface water in the First, Fifth, and White Oak Creeks. The major know radionuclides include cesium, cobalt, strontium, and plutonium.

ACTION: The Main Plant area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 1, submittal of this plan to the Tennessee Department of Health and Environment/ Environmental Protection Agency (TDHE/EPA) was completed in December 1987.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#21)

CATEGORY III

FINDING: WAG 3 - Inactive landfill and scrapyard in WAG-3 have contributed to radioactive contamination of the groundwater in Bethel Valley and of the surface water in the Northwest tributary. Potential releases of organics and metals may also be present. In addition, potential surface soil contamination exists due to past use of the area as a scrapyard. Records identifying specific radionuclides disposed of in the inactive landfill are not available.

ACTION: The Solid Waste Storage Area (SWSA) 3 has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 3, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for October 1988.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#22)

CATEGORY III

FINDING: WAG 4 - The inactive landfill in WAG 4 has contributed to radioactive contamination of the groundwater in Melton Valley and, through seeps, the White Oak Creek and its floodplain. The major radionuclides disposed of in WAG 4 include strontium, cesium, cobalt, and tritium.

ACTION: The Solid Waste Storage Area 4 has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 4, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) was completed in April 1988.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#23)

CATEGORY III

FINDING: WAG 5 - The inactive landfill has contributed to radionuclide contamination of the groundwater in Melton Valley and to the surface water contamination of the Melton Branch and White Oak Creeks. In addition, the process waste sludge basin is a potential source of radioactive, organic and metal contamination to the groundwater. Radioactive wastes include strontium and tritium. Both SWSA 4 and 5 were used as the Southern Regional Burial Ground. The hydrofracture activities are included separately under groundwater.

ACTION: The Solid Waste Storage Area 5 has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The process waste sludge basin is an inactive site which is routinely sampled and monitored. It is a SWMU with WAG 5 and will be included in the RI plan.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 5, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) was completed in March 1988.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#24)

CATEGORY III

FINDING: WAG 6 - The inactive portion of SWSA 6 has contributed to radionuclide and potentially organic and metal contamination to the groundwater in Melton Valley and surface water of White Oak Lake. Radioactive wastes disposed of in SWSA 6 include cobalt, tritium, cesium, and europium isotopes.

ACTION: The Solid Waste Storage Area 6 has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 6, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) was provided in December 1986 but it is in the process of being revised.

Per RCRA requirements, ORNL submitted a Closure Plan/Post-Closure Permit application for the RCRA regulated portion of SWSA-6 to the TDHE and EPA in May 1988. Currently ORNL has received no comments from either TDHE or EPA; however, final approval of the closure plan is projected by November 1988. ORNL will begin implementation of the approved Closure Plan by November 8, 1988.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#25)

CATEGORY III

FINDING: WAG 7 - The four pits and three trenches have contributed to radionuclide and potentially organic and metal contamination of the groundwater in Melton Valley and surface water of the White Oak Creek. Radionuclides disposed of in WAG 7 include strontium, cesium, rubidium, cobalt, plutonium, and transuranic isotopes.

ACTION: The low-level waste (LLW) pits and trenches area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 7, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for September 1988.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#26)

CATEGORY III

FINDING: WAG 9 - A 300,000 gallon retention pond in WAG 9 that is currently backfilled and capped with asphalt has been identified as a source of strontium contamination to groundwater in Melton Valley and to a tributary of Melton Branch. The cap is breached by weathered cracks and a young tree. In addition, during the Survey an area with radiation measurements up to 40 millirad/hour was noted in the low drainage pathway east of NSPP. This contamination may have resulted from two release incidents that reportedly occurred in the 1950's Also, on the eastern hillside below the parking lot, north of NSPP, a dumping area was identified.

The Homogeneous Reactor Experiment (HRE) area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL. The first step in this regulatory process is the development of the Remedial Investigation Plan. For WAG 9, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/ EPA) is scheduled for May 1988.

In July 1952, approximately 800 grams of ^{235}U were lost from the HRE. Subsequent investigations shortly after the incident determined the cause of the leak. Approximately one-half of the spilled material was accounted for and recovered in containment structures. The remainder was probably lost through the shield ventilation system. The drainage ditch just east of the facility was sampled and no activity was detected.

The source of the contamination of the drainage ditch remains unknown. The contaminated area is being added as an additional leak/spill site and will be addressed in the RCRA Facility Investigation (RFI) for WAG 9.

The dump area north of HRE was determined to have resulted from the demolition of an old farmhouse that was used for storage. It has been added to the list of SWMUs.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#27)

CATEGORY III

FINDING: WAG 12 - Due to lack of access control, the inactive contractor landfill has received lead waste, and potentially other organic and metal wastes, and could represent a source of contamination to the groundwater in Bethel Valley.

ACTION: The closed Contractor's Landfill area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area found no evidence that continuing releases were occurring. Based on these results, this area was not recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL. Inclusion of this site in the RI/FS program is dependent upon regulatory review/approval of the RFA assessment.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#28)

CATEGORY III

FINDING: WAG 16 - A small burial area in WAG 16 received sand and ceiling tiles from Hiroshima and possibly other debris which is a potential source of groundwater contamination and seeps that drain into the Clinch River.

The Health Physics Research Reactor area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area found no evidence that continuing releases were occurring. Based on these results, this area has not been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL. Inclusion of this site in the RI/FS program is dependent upon regulatory review/approval of the RFA.

The small burial area in WAG 16 has been listed as a SWMU (SWMU 16.3) and it is described in the RCRA Facility Assessment (RFA) Addendum as follows: "The known materials buried included a container (4 ft by 3 ft [1.2 m by 0.9 m]) of polyethylene beads and a collection of Japanese building construction materials. These were uncontaminated materials which originated from the Nevada Test Site. Three sealed radiation sources, cesium and cobalt, were stored in the area but were removed to SWSA 6 in 1983."

The collection of Japanese building construction materials was not from Hiroshima and was not contaminated.

STATUS: Open

MEDIA: INACTIVE SITES AND RELEASES (#29)

CATEGORY III

FINDING: WAG 17 - A former burn pit exists north of WAG 17 that was used for nonradioactive combustible wastes and is a potential source of metal and organic contamination to groundwater in Bethel Valley and to sediments or water of the White Oak Creek.

ACTION: The ORNL Services area has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/ Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 17, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for December 1988.

A description of the former burn pit was included in the RFA addendum that was submitted to EPA and TDHE in August 1987. Initial sampling and analysis indicated the soil contained concentrations of Cd, Cu, Pb, and Zn above background levels. Slightly elevated levels of Cs-137 were also detected. Additional site characterization has been recommended.

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#30)

CATEGORY II

FINDING: There is a potential for additional underground storage tanks in addition to those included on the site inventory which could represent a potential for undetected leaks to soils and groundwater.

ACTION:

(1) Action is underway to again canvass site personnel to insure that known tanks were not inadvertently overlooked during the initial ORNL task survey.

Beginning in the second quarter FY 1988 and to be completed in the third quarter FY 1988.

(2) An extensive search of ORNL site drawings and photographs also will be conducted in an expeditious manner to aid in discovering underground tanks which may be unknown to current facility owner/operators.

(3) Additionally, selected retired laboratory personnel will be interviewed in a further attempt to determine if underground storage tanks exist which have escaped identification through more conventional sources.

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#31)

CATEGORY III

FINDING: There is a potential for undetected releases of petroleum and petroleum products into the soils and groundwater due to inadequate underground tank inventory monitoring.

ACTION: All of the Laboratory's petroleum storage tanks at ORNL will undergo a volumetric (quantitative) leak detection test in FY 1989 or FY 1990 (testing will be conducted by certified personnel). A volumetric leak detection training program for on-site personnel is being assessed to determine if such measures satisfy the 1984 RCRA amendments. If this approach is approved, a number of ORNL personnel will be trained, certified, and tasked with biennial leak detection testing of all ORNL underground petroleum tanks. If suitable on-site training cannot be accomplished, biennial volumetric leak detection testing will be performed by an approved off-site contractor. Use of automatic liquid detection wells will also be explored as a means of inventory control for underground petroleum storage tanks. In this procedure, liquid sensing cable or other hydrocarbon indicators are installed in modified observation wells to signal the presence of petroleum.

(1) Training and certification of personnel to be completed in CY 1988 if approved.

(2) Conduct of the initial phase of testing would begin following personnel certification in second quarter FY 1989 and would continue through second quarter FY 1990 [78 tanks (currently)].

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#32)

CATEGORY III

FINDING: Above ground storage tanks which do not have adequate secondary containment pose a potential for the release of hazardous materials into the environment and the subsequent contamination of surface water, groundwater and soils.

ACTION: As of June 1987, ORNL has enacted an aggressive diking program. This program requires that all liquid hazardous/toxic materials stored in above ground tanks (including storage facilities) be diked and that such diking be capable of containing the total volume of the largest container of the material stored.

The ORNL "Environmental Restoration and Facilities Upgrade Program" has requested cost estimates for projects to provide secondary containment, where required, at existing tanks and hazardous materials storage facilities throughout the Laboratory.

ORNL management has established a two-year (CY 1989) time-frame for all existing above ground storage tanks ($\geq$ 55 U.S. gallons) and hazardous material storage facilities to adhere to the diking standard set forth in ORNL Diking Criteria, EPM 13.0.

The program began in second quarter FY 1987 and is to continue with achievement of compliance for all ORNL facilities by first quarter FY 1991.

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#33)

CATEGORY III

FINDING: There is a potential for the contamination of surface water, groundwater, and soil from undetected leaks from unidentified above ground storage tanks.

ACTION: Action is underway to again canvas site personnel to ensure that known above ground storage tanks were not inadvertently overlooked during the initial ORNL tank survey. If a tank is found to be permanently out of service or abandoned, the tank will be declared surplus and appropriately disposed of as such.

Beginning in the second quarter of FY 1988 and to be completed in the third quarter FY 1988.

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#34)

CATEGORY III

FINDING: There is a potential for the release of unidentified contaminants to the soils and surface waters from unlabeled, deteriorating drums at isolated locations on the ORNL site. A list of drum locations has been provided to site personnel.

ACTION: At ORNL, drums are utilized for the storage of a wide variety of materials from metal parts to hazardous waste. Since "Love Canal" and other "high visibility" hazardous waste sites, drums, even empty ones, present an image of improper environmental practices. ORNL has recognized this and over the last year several old and abandoned drums, many being empty or containing non-hazardous materials, have been removed from various sites for proper disposal. However, there are still a few problem areas to reduce the potential for the release of contaminants to the soil and surface water for which the following steps are necessary:

(1) Review "drum list" provided by the DOE Survey Team and add additional ones if necessary.

(2) Visit each drum site and determine the proper disposition of each drum or group of drums.

(3) Complete proper paper work to effect selected disposal/storage method and provide to appropriate ORNL staff.

(4) Follow the activities of this work and monitor the progress

To prevent the recurrence of this situation, the following steps will be taken:

(5) Continue to monitor the Laboratory environment for drums or other storage problems.

(6) Develop a procedure to require that all drums be properly labeled with contents and person responsible.

MEDIA: TOXIC AND CHEMICAL MATERIALS (#34) (Continued)

(7) Develop an awareness among Laboratory staff for the need to improve "housekeeping" activities where drums are concerned. This could include limiting the number of drums for product and waste to only a minimum number, proper and timely disposal of waste, proper storage of material, labeling of drums, and other "housekeeping" activities.

Review of the "drum list" provided by the DOE Survey Team was completed during the first quarter of FY 1988. Seventy-five percent of the drums have been disposed of and the remainder will be disposed of by the end of the 3rd quarter FY 1988.

Visits to drum storage sites and determinations of proper disposition were completed during second quarter of FY 1988.

Hazardous waste disposal forms and empty drum forms to implement the selected disposal/ storage methods were completed and provided to appropriate ORNL staff during second quarter of FY 1988.

Followup and monitoring of progress on the appropriate disposal/storage actions continues.

To prevent recurrence of the condition which lead to establishment of the DOE Survey Team's "drum list," the Laboratory environment is being monitored on a continuing basis. A procedure is being developed to require labeling of all drums to identify drum contents and person responsible for the drum. General housekeeping incentives at the Laboratory are currently being expanded to include considerations specific to number of drums, their appropriate storage, and their timely disposal.

STATUS: Open

DRUM LISTING
ORNL Drum Task Group
Updated 6/30/88

Date/Drum Lot	Location	Number Size	Contents	Division	Action	Completion
9/25/87 1-3	7007	3/55 gal	Waste paint	P&E	Label, Containment	Completed 11/16/87
9/25/87 4-13	7006	10/55 gal	Oil, etc	F&M	Recycle Disposal	Completed 11/2/87
9/25/87 14	TSF	1/55 gal	Oil	ECHP Abandoned	Disposal	Completed 1/20/88
9/25/87 15-18	7512	4/55 gal	Soil (Rad)	HSRD	Disposal	Completed 11/30/87
9/25/87 19-22	7025	4/55 gal	Empty	Oper	Disposal/ Return	Completed 11/2/87
9/25/87 23	TSF (WAG-14)	1/55 gal	Plastic and oil	Reactor	Disposal	Completed 11/30/87
9/25/87 24	7002/ WAG17	1/55 gal	Oil & water	P&E	Disposal	Completed 10/2/87
10/8/87 25-26	7601	2/55 gal	Soil	Oper.	Disposal	Completed 10/8/87
10/9/87 27	4500S	1/55 gal	Soil (Rad)	Oper.	Disposal	Completed 11/2/87
10/9/87 28-47	7920	20/55 gal	Empty	ChemTech	Recycle	Completed 10/15/87
10/9/87 48-54	3103	7/55 gal	NaoH Na(OCl)	Reactor	Relocate	Completed 10/23/87
10/16/87 55-56	2539	2/55 gal	Rad-waste	Oper.	Disposal	Completed 10/22/87
10/26/87 57-117	7811	61 various sizes	Various materials	ESD	Disposal	Completed 5/31/88

DRUM LISTING (cont.)

11/16/87 118-122	3544	5/55 gal	Rad-waste	Oper	Disposal	Completed 11/30/87
11/16/87 123	7616	1/55 gal	Well drilling cuttings	Oper	Disposal	Completed 11/30/87
11/16/87 124-127	ERA 2	4/30 gal trash cans	Unknown	ESD	Disposal	Completion Expected 8/31/88
11/16/87 128-138	ERA 30	11/55 gal	Unknown	ESD	Disposal	Completed 3/31/88
11/16/87 139-145	Compactor	7/55 gal	Well Drilling Waste	Oper	Disposal	Completed 11/30/87

MEDIA: TOXIC AND CHEMICAL MATERIALS (#35)

CATEGORY III

FINDING: There is a potential for improper handling of PCB equipment with resulting potential for water contamination and direct contact as a result of deficiencies in labeling, inventorying, and reporting for such equipment.

ACTION: The following actions are proposed to assure that the inventorying, labeling, and reporting includes current ORNL equipment:

(1) Inventorying: Using surveys and inspections, identify transformers, capacitors, equipment, and storage areas that may contain PCBs. (The current capacitor survey form will be modified to include description and property number of equipment containing the capacitors and responsible division and contact in addition to the current information that provides for assessment of capacitor size, location, age, serial number, etc. Contacts will also be asked to verify removal of items listed in the previous annual report.)

(2) Sampling Equipment and Transformers: All PCB-contaminated equipment will be sampled. The two transformers containing > 50 ppm PCBs and a random subset of transformers containing < 50 ppm PCBs will be sampled. If the data indicate that the concentrations currently held in the inventory are not accurate, a more complete sampling will be conducted.

(3) Labeling: In some cases, equipment has been retrofilled and is assumed to contain < 50 ppm PCBs but still carries a PCB label. If analysis confirms the assumptions, labels will be removed. Conversely, if labels are absent where required, they will be put in place. Drums will also be checked for proper labeling.

(4) Reporting: The PCB Tracking System will be updated to reflect the current PCB inventory and activities.

In order to assure that the PCB Tracking System remains current, Environmental Protection Officers and/or other division contacts will be asked to update information regarding the status of PCB articles and storage areas for the previous calendar year. Periodic inspections of selected areas will be used to verify the accuracy of the information received.

MEDIA: TOXIC AND CHEMICAL MATERIALS (#35) (Continued)

ORNL Diking Criteria, EPA-13.0, require that equipment containing > 55 gallons of liquid hazardous/toxic materials, including oil, have a secondary containment. This policy minimizes the potential for water contamination from PCB-contaminated liquids.

(1) Inventorying: ORNL on-site facilities (Stage 1) - complete initial capacitor and miscellaneous equipment survey by April 1, 1988; ORNL facilities at Y-12 (Stage 2) - complete initial capacitor and miscellaneous equipment survey by June 30, 1988. Follow with inventory of transformers and storage areas.

(2) Using preliminary results of the Stage 1 inventory, develop sampling plan and begin initial sampling of miscellaneous equipment by April 1, 1988; complete initial sampling by April 15, 1988. Additional sampling of equipment and transformers, newly identified in the survey or that for which data is suspect, will be conducted during CY 1988 if warranted. Using preliminary results of the Stage 2 inventory, develop sampling plan and initiate sampling of miscellaneous equipment by July 30, 1988; complete sampling by August 30, 1988. Additional sampling of equipment and transformers will be conducted during CY 1988 if warranted.

(3) Labeling: Complete by May 15, 1988, for items tested under the initial sampling program of Stage 1; ongoing through CY 1988. Complete by July 30, 1988, for items tested under the initial sampling program of Stage 2; ongoing through CY 1988.

(4) Reporting: Complete by May 30, 1988, for data derived from the initial sampling program of Stage 1; ongoing through CY 1988 as data becomes available. Complete by September 30, 1988, for data derived from the initial sampling program of Stage 2; ongoing through CY 1988 as data becomes available.

(5) Update: Annual

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#36)

CATEGORY IV

FINDING: There is no evidence that ORNL has remediated past underground petroleum releases.

ACTION: A Contamination Assessment Report that summarized the environmental contamination resulting from the leaking gasoline tank and a Cleanup Management Plan were submitted to the Tennessee Department of Health and Environment (TDHE) June 9, 1988.

A Request for Proposal for site cleanup was released June 20, 1988, responses have been evaluated, and a subcontractor has been selected. Work is expected to begin by July 15, 1988, and it is projected that site cleanup will be completed by December 1988.

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#37)

CATEGORY IV

FINDING: The design of building 7013 is such that chemicals contained within could escape the building via spaces between the walls and the floor.

ACTION: Building 7013 is considered a hazardous materials storage facility; therefore, it is included for consideration in the Environmental Upgrade Program for Diking.

Building 7013 is a facility which is used to temporarily store new chemical products that will be utilized elsewhere at ORNL. The type of liquid chemical products and their total volume will vary significantly at this facility. Our current inventory data indicates that the following liquid chemical products are routinely handled at Building 7013.

Phosphoric acid	Sodium hydroxide
Caustic soda	Perchloroethylene
Trichlorotrifluoroethane	Chlorine bleach
Corrosion inhibitor	Ethylene glycol
Motor cleaner	Hydrochloric acid
Trichlorofluoromethane	Nitric acid
Freon 113	Sulfuric acid

Our records indicate that there have been no significant releases, leaks, or spills of hazardous/toxic materials at Building 7013.

Regarding the upgrade to Building 7013, one of the most cost-effective strategies under consideration to reduce the environmental insult potential is a "Systems Subcontracting" approach in an effort to eliminate storage of chemicals at Building 7013. This system subcontract for chemicals is scheduled to be finalized in June 1988. Additional avenues for reduction of environmental insult potential at Building 7013 will be considered based on the success of the system subcontracting activities.

STATUS: Open

MEDIA: TOXIC AND CHEMICAL MATERIALS (#38)

CATEGORY IV

FINDING: Inadequate tank labeling has been observed in several instances throughout the site.

ACTION:

(1) Appropriate action will be taken to reemphasize to the responsible ORNL divisions the labeling requirements mandated by the Hazard Communication Standard (29 CFR, 1910.1200).

Initiate in second quarter FY 1988, complete in third quarter FY 1988.

(2) Additional follow-up measures will be implemented to ensure labeling is adequate and in compliance with the Standard.

Initiate in second quarter FY 1988, continue on regular basis.

(3)Establish need to maintain NFPA and hazardous labels in store-stock items.

Initiate in second quarter FY 1988, complete in third quarter FY 1988.

STATUS: Open

MEDIA: SURFACE WATER (#39)

CATEGORY III

FINDING: Recent sediment sampling by ORNL has shown concentrations of cesium and mercury in various locations in the Clinch River. A source of some of this contamination appears to be ORNL. In addition, the potential exists for additional contamination relating to laboratory operations present in these sediments.

ACTION: Numerous past studies have identified and quantified the presence of contaminated sediments in the Clinch River from past (and present) ORNL effluents. Evidence of ORNL and DOE concern over these findings is provided by the inclusion of a Clinch River monitoring task in the Biological Monitoring Program and Abatement Plan (ORNL/RAP-LTR-86/50) being implemented as part of the ORNL NPDES permit requirements. Sediment and biological sampling and analysis is being conducted as part of this program in order to assess the biological impact that such releases are having on the ecology of that water body.

Additional efforts under the RCRA 3004(u) provisions are getting under way in order to provide a broader scope characterization and remedial action planning base.

Annual reports on that program are being provided to the TDHE and EPA. The first of these (ORNL/TM-10399) was issued in April 1987. The Remedial Investigation Plan is scheduled for submittal for regulatory review before December 1988, as part of a three-plant effort to evaluate off-site impacts from DOE operations.

STATUS: Open

MEDIA: SURFACE WATER (#40)

CATEGORY III

FINDING: Discharges from the White Oak Creek, inflow from groundwater, and runoff from SWSA-6 have potentially contributed to organic and metal contamination of the White Oak Lake water and sediments. The major radionuclides identified as present in the sediments include strontium, cesium, and cobalt. In addition, tritium has been measured in high levels in the surface water sampling locations on the Melton Branch and White Oak Creeks nearest to the lake. This contamination represents a continuing source of contaminants to the groundwater and the Clinch River, as well as representing a source of contaminants to wildlife using the lake.

ACTION: The White Oak Creek watershed has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 2, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for September 1988.

STATUS: Open

MEDIA: SURFACE WATER (#41)

CATEGORY III

FINDING

As a result of releases, spills, and contaminated seeps near the burial ground, the sediments and waters in various portions of the White Oak Creek have radionuclide and potentially have organic and metal contamination. The major radionuclides identified in the creek include strontium, cesium, cobalt, and tritium. This contamination in the White Oak Creek serves as a continuing source to the White Oak Lake and poses the potential for direct contact exposure and a source of contaminated drinking water for wildlife.

ACTION:

The White Oak Creek watershed has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 2, submittal of this plan to the Tennessee Department of Health and Environment/ Environmental Protection Agency (TDHE/EPA) is scheduled for September 1988.

STATUS:

Open

MEDIA: SURFACE WATER (#42)

CATEGORY III

FINDING: Activities in the Melton Valley, particularly those associated with HIFR and SWSA-5 have resulted in radionuclide contamination of the Melton Branch. Radionuclides identified in the sediments include cobalt and strontium. In addition, tritium has been identified in the water at increasing levels over the last few quarters. Contamination in the Melton Branch serves as a continuing source to the White Oak Creek and ultimately to the White Oak Lake. In addition, it serves as a source of contaminated drinking water for wildlife.

ACTION: The Melton Branch watershed has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAGs 5 and 8 submittal of these plans to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for March 1988 and September 1988, respectively.

STATUS: Open

MEDIA: SURFACE WATER (#43)

CATEGORY III

FINDING: Inflow from seeps contaminated by SWSA-3 have contributed to radionuclide, primarily strontium, contamination of the sediment in Northwest Tributary. In addition, the potential exists for organic and metal contamination from the seeps and surface runoff. The Northwest Tributary represents a lesser source of contamination to the White Oak Creek and poses the potential for direct contact exposure and a source of contaminated drinking water for wildlife.

ACTION: The Northwest Tributary watershed has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL.

The first step in this regulatory process is the development of the Remedial Investigation Plan for each Waste Area Grouping (WAG). For WAG 3, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/EPA) is scheduled for October 1988.

STATUS: Open

MEDIA: SURFACE WATER (#44)

CATEGORY III

FINDING: There is a potential for sediment contamination of radionuclides, organics, and metals from SWSA-3 via groundwater to Raccoon Creek. Current water monitoring of Raccoon Creek is upstream of the area where groundwater is suspected of entering. Any contamination found in Raccoon Creek would represent a source to the Clinch River and pose a source of contaminated drinking water for wildlife.

ACTION: The Solid Waste Storage Area 3 (including Racoon Creek) has been identified in the Resource Conservation and Recovery Act (RCRA) Facilities Assessment (ORNL/RAP-12/V3) as containing known solid waste management units. Initial sampling of that area confirmed the presence of contaminated materials and showed evidence that continuing releases were occurring. Based on these results, this area has been recommended for implementation of a comprehensive Remedial Investigation/Feasibility Study (RI/FS) as a permit condition under the RCRA Permit for ORNL. The first step in this regulatory process is the development of the Remedial Investigation Plan. For WAG 3, submittal of this plan to the Tennessee Department of Health and Environment/Environmental Protection Agency (TDHE/ EPA) is scheduled for June 1988.

The present site of that monitoring station was selected as the location that would capture all known sources of ^{90}Sr contamination migrating in that direction from either SWSA 3 or the Contractors' spoil area, yet not so far downstream that dilution would interfere with detection sensitivity. Our studies indicate that the single source of the ^{90}Sr in Racoon Creek is a seep that discharges to a tributary of Racoon Creek. The tributary flows into Racoon Creek about 400 ft upstream of the present monitoring station. There is no evidence of contaminated water discharging to Racoon Creek at points further downstream.

STATUS: Open

MEDIA: SURFACE WATER (#45)

CATEGORY III

FINDING: Activities at the ORNL Lead Shop (Building 7005) create the potential for releases of lead to the 7000 area storm sewer and subsequently to the White Oak Creek. These activities include: outside storage of lead; outside storage of lead slag wastes; and disposition from building stacks. It should be noted that the slag waste may constitute a RCRA waste based on toxicity; and, if so, current storage practices are not in compliance with RCRA requirements.

ACTION: Although leaching by rainwater of lead stored on outdoor pallets may be insignificant, the cumulative effort may represent a source of contamination. Measures that will eliminate this potential source of lead releases (i.e., consolidation and covers) will be instituted. Evaluation of long-term storage facilities for recyclable lead is underway. A determination of the RCRA status of the slag waste (EP toxicity) has been initiated and Building 7005 emissions will be evaluated for the presence of lead. Investigation of possible lead contamination from past operations will be a part of the Remedial Investigation (RI) for WAG-17, the ORNL Service Area.

All of the lead which was stored outdoors has been either moved indoors for recycle or covered with tarpaulins.

Initial chemical analyses have confirmed that the lead slag is a RCRA characteristically hazardous waste (EP toxic). Each can of slag was placed inside a sealed 55-gallon drum and transported to Building 7507 which is operated under an interim RCRA permit.

Stack emissions data were collected and submitted to the state of Tennessee on October 14, 1986, as part of an application for an air emission permit. During February and March of 1986, the Industrial Hygiene Department measured lead levels in the air in the work areas inside of Building 7005 and no sample exceeded the TLV (0.05 mg/m^3).

The list of SWMUs in WAG 17 will be revised to include the storage and processing of scrap lead. The RCRA Facility Investigation (RFI) for WAG 17 will characterize the site as a potential source of past contamination releases.

STATUS: Open

MEDIA: SURFACE WATER (46)

CATEGORY IV

FINDING: NPDES permit exceedances for total suspended solids (TSS), fecal coliform, and chlorine have occurred at two outfalls. Four exceedances of TSS were reported in 1986 near the paint shop (Building 7007); while an additional four were recorded there as of August 1987. In 1986, the Sewage Treatment Plant recorded eight exceedances for fecal coliform and one for chlorine. As of August 1987, the Treatment Plant recorded four exceedances for fecal coliform and an additional one for chlorine.

ACTION:

(1) Action in response to Active Waste Handling (#19) will address the TSS problem at the Paint Shop in that it will assure that discharges from the Paint Shop are within the levels allowed by the NPDES permit.

(2) The STP effluent is treated by chlorination, using a chlorine contact chamber, as the final step before discharge to White Oak Creek. The NPDES permit allows a maximum Cl concentration of 0.5 mg/l in the effluent from the contact chamber, a level at which fecal coliform bacteria in the effluent are effectively controlled. However, Cl levels above 0.2 mg/l in the STP effluent have caused the effluent to fail NPDES toxicity tests. The existing chlorination system, which automatically adjusts the Cl level in the contact chamber according to feedback from a Cl detection device within the chamber, is not adequately precise to maintain this balance without occasional Cl and fecal coliform exceedances occurring in the STP effluent. For acceptable operation, the STP chlorinator must: (1) introduce sufficient Cl into the wastewater to keep bacteria levels below the NPDES limit (400 colonies/100 ml); and (2) remove sufficient Cl from the final effluent to meet the NPDES chlorine limit and to pass the NPDES toxicity test.

Two remedial options are being investigated for the STP:

a) ORNL's Engineering Division is investigating an ozonation system for bacterial control, as an alternative to chlorination.

MEDIA: SURFACE WATER (46) Cont.

The ozonation system option is in the preliminary study phase: installation could probably be conducted in the same time frame as for the chlorination-dechlorination system, FY 1988

b) A feasibility study will be undertaken to determine if lengthening the effluent channel, after chlorine addition and prior to discharge, would allow higher concentrations of chlorine to be added and proper dissipation to occur. An additional modification being considered includes the possible attachment of a dechlorination unit onto the existing chlorinator.

Lengthened effluent channel feasibility study or attachment of a dechlorination unit: in progress.

STATUS: Open

MEDIA: QUALITY ASSURANCE (#47)

CATEGORY IV

FINDING: There is a potential for ascribing surface water samples to the wrong location due to labeling bottles in the laboratory instead of in the field. The practice accepted by USEPA is to write the location where the samples are taken at the location immediately following the taking of the sample.

ACTION: Part of the problem described above is due to ORNL monitoring stations having been assigned similar identifications, such as WOC-C and WOC-C HW. In all cases where this is applicable changes have been made, as in the above case where WOC-C HW has been changed to HEADW. We feel strongly that the practice of filling out labels to the extent possible prior to sampling is a very good QA/QC practice, especially at ORNL where over 150 water samples per week are collected.

Changes have already been made where similar identification occurred.

STATUS: Closed